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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3,3-HEXAFLUOROPROPANE AND AT LEAST ONE OF 1,1,1,2,3,3-HEXAFLUOROPROPANE AND 1,1,1,2,3,3-HEPTAFLUOROPROPANE

(57) Abstract: A process is disclosed for the manufacture of 1,1,1,3,3,3-hexafluoropropane (HFC-236fa) and at least one 1,1,1,2,3,3-hexafluoropropane (HFC-236ea) and 1,1,1,2,3,3-heptafluoropropane (HFC-227ea). The process involves (a) reacting HF, Cl<sub>2</sub>, and at least one halopropene of the formula CX<sub>3</sub>CCl=CX<sub>2</sub> (where each X is independently F or Cl) to produce a product including both CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CClFCClF<sub>2</sub>; (b) reacting CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CClFCClF<sub>2</sub> produced in (a) with hydrogen to produce a product comprising CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub> and at least one compound selected from the group consisting of CHF<sub>2</sub>CHFCF<sub>3</sub>, and CF<sub>3</sub>CHFCF<sub>3</sub>; and (c) recovering from the product produced in (b), CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub> and at least one compound selected from the group consisting of CHF<sub>2</sub>CHFCF<sub>3</sub> and CF<sub>3</sub>CHFCF<sub>3</sub>. In (a), the CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CClFCClF<sub>2</sub> are produced in the presence of a chlorofluorination catalyst including a ZnCr<sub>2</sub>O<sub>4</sub>/crystalline  $\alpha$ -chromium oxide composition, a ZnCr<sub>2</sub>O<sub>4</sub>/crystalline  $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/ $\alpha$ -chromium oxide composition and/or a zinc halide/ $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent.